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Association of British Insurers (ABI) Technical Briefing:

Fire Performance of Sandwich Panel Systems

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Fire Performance of Sandwich Panel Systems.
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Technical Briefing
Fire performance of sandwich panel systems

Executive Summary

Over the last decade or so significant losses have occurred associated with large fires in which composite panels have been a feature. Many have related to risks within the food manufacturing sector.

ABI commissioned BRE to draw up this Technical Bulletin to assist commercial property insurers in understanding the features of composite panel systems, their use and management which either contribute to or mitigate the risk of such losses. The findings will also be of interest to construction professionals and facilities managers in minimising risks in both new and existing buildings. This document covers important issues such as fire safety management, compartmentation, panel system construction, combustibility and fire performance of panel core material and the choice of system for applications with differing inception and fire spread risks.

As with other types of risk, buildings containing sandwich panel systems should be considered on their own merits by underwriters and risk managers, taking account of application, choice of sandwich panel system and fire risk management measures in place. A three pronged approach is necessary, balancing negative factors in any one area with strengths elsewhere.

Sandwich panels do not start a fire on their own, and where these systems have been implicated in fire spread the fire has often started in high risk areas such as cooking areas, subsequently spreading as a result of poor fire risk management, prevention and containment measures. Prevention of ignition and containment of early fire spread are critical. Specific and detailed risk assessment is crucial. Where high levels of risk management are not achievable, due to the nature of the processes in the business in question and/or the quality of the management demonstrated, and the risk of ignition is high, the use of panel systems with high fire performance characteristics should be considered. Systems meeting accreditation schemes such as LPS 1181 demonstrate such characteristics.

Some applications, including stand-alone cold stores and panel systems used as external claddings in areas where arson risk is low, have experienced few fire losses. In low risk situations such as these there can be greater flexibility in choice of panel system, taking account of other business needs such as hygienic environments and insulation properties.

Inevitably many situations will fall between clear cut 'high' or 'low' risk scenarios. Here the degree of financial exposure is likely to drive insurers' decisions. Fire stop panels and other fire safety management measures have a significant role in such situations, and the importance of a demonstrated ability by facilities managers in ensuring that such systems are robust cannot be over-emphasised.

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ABI Technical Briefing on Sandwich Panels – The Insurers View

Introduction

The Association of British Insurers (ABI) recently updated its Technical Briefing on sandwich systems (sandwich panels are also known as composite or insulated panels) which was first published in May 2003. This independent and authoritative 24-page document contains a wealth of information and advice on panel systems. The purpose of this document is to summarise its contents with specific reference to LPCB approved panels.

Kingspan Insulated Panels welcomes and supports the updated publication of this document and believes that it is an important step forward in educating the market about the real issues with sandwich panels.

LPCB Approved Panels

The document is very positive in the way that it deals with LPCB approved panel systems. There are a number of important references to LPCB approved panels. The main ones are summarised as follows –

'Where high levels of risk management are not achievable, due to the nature of the processes in the business in question and/or the quality of the management demonstrated, and the risk of ignition is high, the use of panel systems with high fire performance characteristics should be considered. Systems meeting accreditation schemes such as LPS 1181 demonstrate such characteristics'. (Executive summary).

It is clear that in high risk situations the use of LPCB approved panel systems should be considered. For low risk situations the choice of panel system can be more flexible. However, Kingspan Insulated Panels believes that, in current insurance market conditions, it is prudent to use LPCB approved panel systems on all new build projects – even low risk. This gives the owner maximum flexibility to cover potential future change of use.

Recent changes to both clauses 4.4 and 3.11 of the Technical Briefing have seen the ABI update the text on LPS 1181 and clarify the grading of sandwich panels.

'For insurance underwriting purposes, Insurers use the Design Guide for the Fire Protection of Buildings as a basis for providing guidance on what they require for property protection purposes, subject to a broad based risk assessment. In respect of external composite panels, these must be suitable for the intended end use application and should either have non-combustible cores or be LPCB approved to the appropriate requirements of LPS 1181 (see paragraph 3.11) and fully satisfy insurers fire resistance requirements (insulation and integrity) through appropriate testing.' (Clause 4.4)

Kingspan Insulated Panels are delighted that the ABI has once again recognised that external composite panels must achieve LPS 1181 or have a non combustible core despite the efforts of some within the industry to imply massive changes to the clause. The LPCB is the recognised certification for fire performance in the UK and Kingspan would encourage specifiers and end users to look for products that have received LPCB certification as outlined by the revised ABI clause 4.4.

'Sandwich panel systems approved by LPCB to LPS 1181 will not make a significant contribution to a fire'. (Clause 3.5, Page 6)

'Panels satisfying the requirements of LPS 1181 will not make a significant contribution to fire growth'. (Clause 3.11, Page 8).

'For new buildings, serious consideration should be given to the use of the better performing LPCB approved sandwich panels to LPS 1181 for external claddings in any of the following circumstances taking account of the other factors identified as critical to fire ignition risk and spread…' (Clause 4.2 Page 10.).

This recommendation refers to higher risk situations such as high financial exposure, hazardous processes, high fire load etc. This is a particularly important statement in support of LPCB approved panels in high-risk new build situations.

External Panel Systems

In addition to the comments on LPCB approved panels reported above, the document makes a number of important points in relation to external panels –

'There are far fewer instances of external envelopes being the cause of severe fire spread compared to insulated internal envelopes used for example to enclose food processing areas in food factories'. (Clause 3.3.1, Page 5).

Published fire statistics tend to show that external claddings constructed from sandwich panels are not a major fire risk, particularly if the chances of arson attack can be reduced and its effect minimised.' (Clause 4.1, Page 10).

These statements recognise the reality that there is very little evidence that external claddings of any kind contribute to fire losses.

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Internal Panel Systems

The document contains a significant amount of comment about the poor performance of certain types of internal panel systems. The reality is that polystyrene panels are present in many large insurance industry fire losses.

The document clearly differentiates between panels used in food factories (Clause 5) and cold store buildings (Clause 6). There are a number of references to Firestop panels in these sections. Firestop panels are comprised of polystyrene core with mineral fibre edge strips. Firestop panels do not meet the requirements of LPS 1181 and are therefore not LPCB approved.

The risk matrices in Appendix 1 of the Technical Guide give an excellent guide to the suitability of various panel types to the level of risk. Firestop panels are deemed acceptable for certain low / medium risk situations. However LPCB approved PIR panels are acceptable for all situations with the one exception of high risk cooking areas. Reference to the risk matrices provides a powerful tool in demonstrating insurer acceptance of LPCB approved PIR.

'It is suggested that unless the risk is considered low, sandwich panels that have not been approved are best avoided, particularly in respect to internal applications involving hot food processes.' (Clause 3.8, Page 7).

Fire-Fighting Issues with Panels

The document is helpful in clarifying some of the myths about fire-fighting. The following quotes are particularly informative and fully support statements made by Kingspan Insulated Panels –

'There are concerns that combustible sandwich panels used inside the building (not part of the external fabric) may create an additional problem to fire fighters unless the building is fully sprinkler protected or is sub-divided by fire resisting compartment walls. The fire services are in general less concerned where sandwich panels are used as external roof and wall claddings, securely fixed to the structural frame of the building, since these do not represent the same danger to life during firefighting' (Clause 3.9, Page 7).

'Sandwich panels approved by LPCB to LPS 1181 should not create a problem for fire fighting if adequately supported, as any burning will be considerably reduced'. (Clause 3.9, Page 8).

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Panel Selection By Risk Assessment

There is no doubt that risk assessment is the key and an important comment made in this respect is –

'As the risk gets higher, due to a combination of these factors, there will be a need to put more emphasis on non-combustible sandwich panels. Conversely, for low risk applications (e.g. secure, stand-alone cold stores) it may be possible to accept sandwich panels that do not meet the LPS 1181 requirements' (Clause 3.1, Page 4).

Careful analysis of the document indicates that the only high risk area that cannot be satisfied by an LPCB approved PIR panel solution is a high risk food factory cooking area which requires INT-1 to LPS 1181 Part 2.

The document also recognises that there is a role for non-LPS1181 approved panels in low / medium risk applications. This recognition is particularly relevant to the use of PUR external panels on existing buildings. However the reality is that all Kingspan insulated panels supplied since 2004 have been approved to LPS 1181 to ensure certainty of performance and insurability.

Fire Safety Management

The document refers to fire safety management or risk management on numerous occasions. It is clear that poor levels of fire safety management have contributed to numerous losses. Improvement in fire safety management is a major objective of insurers.

'It recommends a risk base approach to the various relevant parameters including amongst other things the use of the building, location of panels, types of panel and standard of fire safety management.' (Clause 1.1, Page 1).

'Good standards of fire safety management can substantially reduce the risk.' (Clause 1.2, Page 1).

Overall Conclusions

This ABI Technical Briefing is a major step in clarifying insurers views about composite panel systems. The 'scare science' and the 'manufactured uncertainty' employed by certain parties to attack insulated panels in general is shown to be false.

Differentiation through knowledge and risk assessment is the key.

In general terms the contents of the ABI document are consistent with the messages that Kingspan Insulated Panels have been putting into the market place over the last number of years.

When all factors are taken into account it is clear that Kingspan FIRESafe panel systems, approved to LPS 1181, provide the all encompassing design solution for commercial and industrial buildings.

Visit www.kingspanpanels.com/fire for further information.

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